Requirements

"Mathochist Studios" Cohort 4, Team 11

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Introduction

The development of requirements for a project is vital for not only satisfying stakeholders but also giving the development team a set of standards to follow in order to develop a high quality product. The development process of these requirements involves multiple participants working together to find agreement specifically in negotiating with our customer to understand and plan a clear vision for where this project will be built upon.

We were first introduced to the main concept of what our product would be from our client with a single statement of need (SSON) in which he requested, “A functional maze-like game which is targeted towards first year students but also suitable for pre-university ages and other university students”. Although this statement is very brief and not very specific, it gives an idea of the overall end product and it gives a base standard in which our team and client can build and develop upon.

From the product brief we already had some very simple and standard requirements for a standard product which we discussed in further detail with our client, in addition, our client added some further extra requirements mainly non-functional (for example, child-friendly, bright standout colours, etc.). However, some features of the game were made clear by our client that they are entirely up to our team's ideas in terms of screen layout and different events that the player can run into.

Each and every requirement has a specific ID. Each ID contains, first the type of requirement it is, then it contains a short meaningful ID of what the requirement is about.
E.g. UR_SOUND_AND_MUSIC is a User Requirement that pertains to the sound and music of the game.

For non-functional requirements we have added a fit criteria section in order to aid in iterative testing. It creates some sort of measure in order to quantify our intention with a certain requirement in order to test if a certain requirement has been met.

During our meetings with our client it was made very clear that there should be a priority hierarchy for certain requirements as there is always a risk as a team of creating too many unnecessary additional requirements which were not elicited by our client which creates unnecessary workload for our team to achieve in a limited time. To mitigate this we have labelled each requirement with a certain priority in order to focus on the clients needs and make sure our end product meets the standards that were required to us. The tables were then sorted into priorities from top to bottom, with the most important priority, “shall”, at the top, followed by “should” and then “may”.

All requirements were also sorted into hierarchies depending on which component of the system the requirements were related to. This was done in order to make the tables more easily/efficiently readable when dealing with many requirements.

The following tables define the requirements elicited from our stakeholder. Each requirement has at least an ID and a description. Each NFR and FR should have a corresponding user requirement which they stem from. Furthermore each UR has a priority defined by our stakeholder.

User Requirements

ID	Description	Priority
Events		
UR_POSITIVE_EVENTS	At least 3 visible events that will benefit the player.	Shall
UR_NEGATIVE_EVENTS	At least 5 visible events that will hinder the player from progressing.	Shall
UR_HIDDEN_EVENTS	At least 3 hidden events (invisible until triggered).	Shall
Audio		
UR_SOUND_AND_MUSIC	Have sound effects for all the different interactions, and have background music. This helps with immersion when playing the game.	Should
UR_ADJUSTABLE_VOLUME	Volume should be adjustable and mutable at any time during the game.	May
Accessibility		
UR_FAMILY_FRIENDLY	The game must be friendly to all ages, including children, it should not contain any graphic content.	Shall
UR_COLOURBLIND_ACCESSIBLE	The game must be easily legible and clear to people who experience common forms of colour blindness	Shall
UR_DYSLEXIA_ACCESSIBLE	The game should have text that is always legible, even on different resolutions. So that it is accessible and enjoyable for people who have dyslexia.	Shall
Gameplay Mechanics		
UR_TIME_LIMIT	The game should be at most 5 minutes.	Shall
UR_MAZE_LIKE	The game must be a maze or at least maze-like. It also must be escapable.	Shall
UR_SCORE_SYSTEM	The game must have a score system, calculating and presenting the player's final score when they escape the maze.	Shall
UR_DEAN_CHASING	The game should include the university dean chasing the player, the dean is trying to stop the player from escaping.	Shall
UR_ACHIEVEMENTS	The game must have in-game achievements that they can collect; The “perfection achievement” affects the final score positively.	Shall
UR_LEADERBOARD	The game must have a leaderboard recording the names and scores of the top 5 scores. Accessible from the main screen.	Shall

UR_VARIABLE_DIFFICULTIES	Have multiple difficulties, in case players would like a bigger challenge. Higher difficulties can give higher scores.	May
Technical Features		
UR_SCREEN_SCALABILITY	The game must be playable and legible on varied screen sizes and shapes (e.g. Larger screens for university open days).	Shall
UR_PAUSABLE	The game should be able to be paused at any time.	Shall
UR_PLATFORM_COMPATIBLE	The game must be compatible with MacOS, Linux and Windows.	Shall
User Experience		
UR_NOT_FRUSTRATING	Aimed at a casual audience, the game should not be too challenging, and not too frustrating to play.	Shall
UR_UNIVERSITY_ACCURATE	The game must be generally accurate to a university, however some liberties are allowed. Overall, the user must feel like they are traversing a university campus, both in looks and gameplay.	Shall

Functional Requirements

ID	Description	Corresponding UR ID
Events		
FR_POSITIVE_EVENTS	The game will include at least 3 visible positive events that aid the player	UR_POSITIVE_EVENTS
FR_NEGATIVE_VENTS	The game will include at least 5 visible negative events that hinder the player	UR_NEGATIVE_EVENTS
FR_HIDDEN_EVENTS	The game will include at least 3 hidden events (invisible until triggered) that will either hinder or aid the player.	UR_HIDDEN_EVENTS
Gameplay Mechanics		
FR_TIME_LIMIT	Failure to finish the game within the 5 minute time limit results in a “Game Over” screen, with no further gameplay.	UR_TIME_LIMIT
FR_PAUSABLE	When the pause button is pressed, the timer and all gameplay will stop until unpaused.	UR_PAUSABLE

FR_ACHIEVEMENTS	The game must include achievements that, when achieved, can affect the final score of the user.	UR_ACHIEVEMENTS
FR_EASY_MOVEMENT_CONTROLS	The game should include simple, intuitive movement controls. E.g WASD keys, or arrow keys. This is to make the game easier to navigate for users inexperienced with computer games.	UR_NOT_FRUSTRATING
FR_SCORE_SYSTEM	The game must include a score system to calculate a score, taking into account coins/powerups collected, happiness, difficulty and time remaining. The player's final score is shown to them when they escape the maze.	UR_SCORE_SYSTEM
FR_MAZE_LIKE	The game must include a maze or incorporate maze-like level design. It must be escapable.	UR_MAZE_LIKE
FR_DEAN_CHASING	In some parts of the map, the player will be chased by the dean, getting caught by the Dean will result in a time penalty.	UR_DEAN_CHASING
Menu Features		
FR_LEADERBOARD	The game must contain a leaderboard that records the names and scores of the top 5 scores.	UR_LEADERBOARD
FR_VARIABLE_DIFFICULTIES	The game can have multiple difficulties, for players that want more of a challenge. Higher difficulties will affect the speed of the Dean, time loss from negative events, etc. Higher difficulties lead to higher scores.	UR_VARIABLE_DIFFICULTIES
FR_ADJUSTABLE_VOLUME	The game can include a volume slider that lets users adjust or mute the sounds from the game.	UR_ADJUSTABLE_VOLUME
Audio		
FR_SOUND_AND_MUSIC	The game must include sound effects and background music, to help with immersion and better general game feel.	UR_SOUND_AND_MUSIC

Non-Functional Requirements

ID	Description	Fit Criteria	Corresponding UR ID
World Design			
NFR_UNIVERSITY_ACCURATE_LOOK	The game will look somewhat similar to university, it must feel as if the player is traversing a university campus.	The game's map shall contain at least 3 “University landmarks” (Nisa (Nika*), Central Hall, Longboi Statue) *changed for copyright reasons	UR_UNIVERSITY_ACCURATE
NFR_UNIVERSITY_RELATABLE_EVENTS	The game will contain some common events that most university students find relatable to their university life.	80% of users rated the game as at least 7/10 in a question gauging the “relatability to university” of the events in our user testing.	UR_UNIVERSITY_ACCURATE
Accessibility			
NFR_NO_GRAPHIC_CONTENT	The game must not contain any harsh or graphic imagery, it must be suitable for users of all ages.	The game must adhere to the BBFC PG rating guidelines stated on their website.[1]	UR_FAMILY_FRIENDLY
NFR_COLOURBLIND_FRIENDLY	The game’s visual design must be distinct and legible to users with common forms of colour blindness.	The game must not use any colour-dependent signalling in the game, and colours that were used were kept purely for aesthetics.	UR_COLOURLBLIND_ACCESSIBLE
NFR_ALWAYS_LEGIBLE_TEXT	The game’s text elements must use clear and high-contrast fonts, maintaining sufficient size and spacing to ensure legibility on all common resolutions.	95% of users reported that they had no legibility issues whilst playing the game in our user testing.	UR_DYSLEXIA_ACCESSIBLE
User Experience			
NFR_CLEAR_BOUNDARIES	The game should have clear paths and visibly distinct boundaries, ensuring it is obvious which areas are navigable to prevent player frustration	80% of users reported that they had no issues identifying which areas were or were not navigable in our user testing.	UR_NOT_FRUSTRATING
NFR_CASUAL_FRIENDLY_DIFFICULTY	The game's base difficulty must not be too challenging, it must not be frustrating for beginner users to play.	70% of users rated the game as “Balanced” in a question gauging the difficulty of the game in our user testing.	UR_NOT_FRUSTRATING
Technical Features			

NFR_SCREEN_SCALABILITY	The game window shall support resizing and maintain legibility by resizing the game content to preserve the aspect ratio.	The game must not have any overlapping or distorted elements when the window is up/down sized to different sizes/shapes.	UR_SCREEN_SCALABILITY
NFR_PLATFORM_COMPATIBILITY	The game must run smoothly and without errors on macOS, Linux and Windows	When game testing, the game must have been tested on all three operating systems. The game must run smoothly and without any problems.	UR_PLATFORM_COMPATIBLE

Bibliography

[1] BBFC, “BFC Parental Guidance,” 2025. [Online]. Available: https://www.bbfc.co.uk/rating/PG

[2] NCEAS, “Colourblind Safe Colour Scheme,” 2025. [Online]. Available: https://www.nceas.ucsb.edu/sites/default/files/2022-06/Colorblind%20Safe%20Color%20Schemes.pdf